

GENERAL CERTIFICATE OF SECONDARY EDUCATION

DESIGN AND TECHNOLOGY

A532

Graphics

Sustainable Design

Candidates answer on the question paper.

OCR supplied materials:
None

Other materials required:
None

Friday 21 January 2011

Afternoon

Duration: 1 hour



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions in sections **A and B**.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- Your quality of written communication is assessed in questions marked with an asterisk (*).
- This document consists of **12** pages. Any blank pages are indicated.

Section A

Answer **all** questions.

You are advised to spend 15 minutes on this section.

On questions 1–5 **circle** your answer.

- 1** Using recycled materials:
- (a) Causes environmental damage
 - (b) Creates mass unemployment
 - (c) Makes life easier
 - (d) Reduces the consumption of natural resources
- [1]**
- 2** A product is sustainable if:
- (a) The manufacturing process is completed quickly
 - (b) The materials used are of a good quality
 - (c) The materials and manufacturing processes used have little impact on the environment
 - (d) The materials and manufacturing processes used are inexpensive
- [1]**
- 3** Which of the following cannot be recycled after use:
- (a) Newspapers
 - (b) Plastic bottles
 - (c) Compact Discs
 - (d) Drinks cans
- [1]**
- 4** To repair a product means:
- (a) To throw it away
 - (b) To take it apart and use for a different purpose
 - (c) To choose not to use the product
 - (d) To fix or mend it so it can be used again
- [1]**

- 5 The main purpose of packaging is to:
- (a) Protect and prolong the shelf life of a product
 - (b) Be cheap to produce
 - (c) Use as many different materials as possible
 - (d) Be always made from plastic


[1]

6 Name **one** of the places where non-recyclable domestic waste is taken for disposal.
 [1]

7 In the context of a product, what does the term redundant mean?
 [1]

8 Which of the 6Rs describes when we decide **not** to buy or use a product?
 [1]

9 Name the term given to the biodegrading of organic waste left to rot in the garden.
 [1]

10 State the meaning of the symbol below.
 [1]

Decide whether each of the following statements is **true** or **false**.
 Tick (✓) the box to show your answer.

	True	False	
11 Glass can decompose	<input type="checkbox"/>	<input type="checkbox"/>	[1]
12 Special symbols are put on packaging to let us know if it can be recycled	<input type="checkbox"/>	<input type="checkbox"/>	[1]
13 Repairing a product is bad for the environment	<input type="checkbox"/>	<input type="checkbox"/>	[1]
14 A cardboard box can be recycled	<input type="checkbox"/>	<input type="checkbox"/>	[1]
15 A carbon footprint can be measured by making a greenhouse gas emissions assessment	<input type="checkbox"/>	<input type="checkbox"/>	[1]

Total [15]
Turn over

Section B

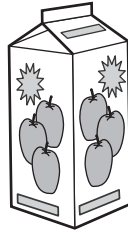
Answer **all** questions.

You are advised to spend 45 minutes on this section.

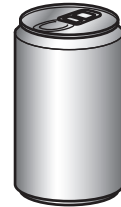
16 Fig.1 shows three types of drinks containers.



Glass bottle



Cardboard carton



Aluminium Can

Fig. 1

(a) Give **two** reasons why glass containers are considered to be environmentally friendly.

- 1
-
-
-
- 2
-
-
- [2]

(b) The cardboard carton used for drinks is made from a laminate of cardboard and polyethylene.

Give **four** reasons why these materials are suitable.

- 1
-
- 2
-
-
- 3
-
-
- 4
-
- [4]

(c) Explain why aluminium cans are suitable for recycling.

.....
.....
.....
.....
.....
.....
.....
.....
..... [4]

(d) Give **two** ways in which a consumer can make packaging easier to recycle.

1

.....

2

..... [2]

(e) Explain what is meant by Primary recycling.

.....
.....
.....
.....
..... [3]

Total [15]

17 Fig. 2 shows a solar powered road sign. The road sign must light up at night.

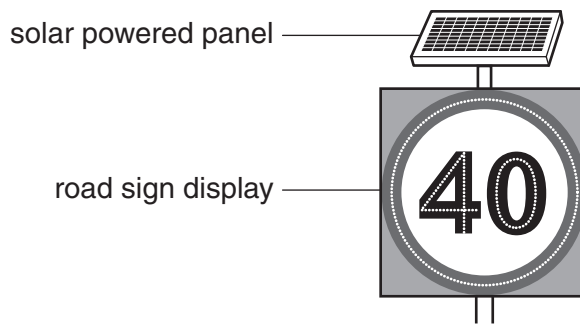


Fig. 2

(a) Explain what is meant by the term solar power.

.....
.....
..... [2]

(b) Solar power is a sustainable energy source. Name **one** other sustainable energy source.

..... [1]

(c) Give **one** reason why a road sign would be suitable for using solar power.

.....
.....
..... [2]

(d) Describe how the road sign would be able to light up at night.

.....
.....
..... [2]

(e) Explain why, after testing and trialling, the road sign was found to be unsuitable for some parts of the country.

.....
.....
..... [2]

(f) Complete the table below.

6Rs	Description
RECYCLE	Products that can be recycled or use recycled materials
	Products that can be adapted for an alternative use
	To approach design problems differently
REDUCE	

[3]

8

- (g)** A symbol to represent solar power is needed. Using a sketch and notes design **one** idea for a suitable symbol.

[3]

Total [15]

18 Fig. 3 shows some DVD's, together with the box used to hold the DVD's during transport to the retailer.

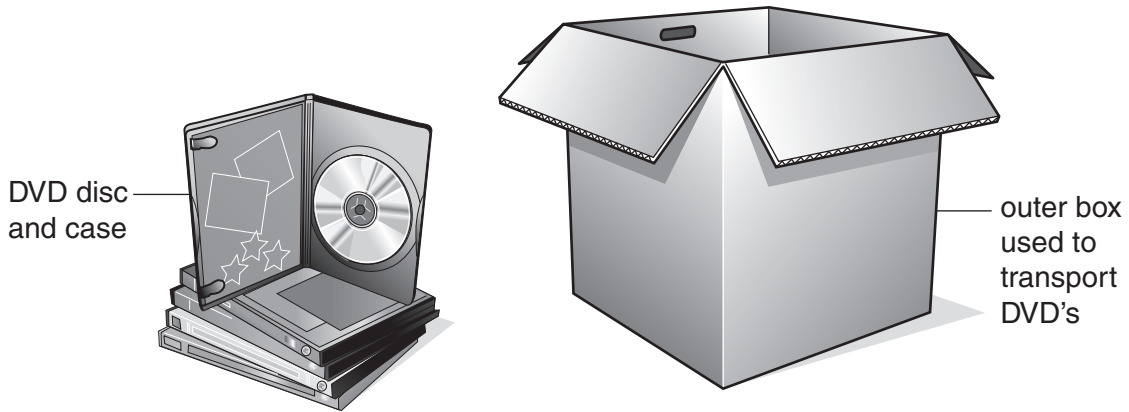


Fig. 3

(a) Give **one** reason why the manufacturer would package the DVD's in an outer box.

..... [1]

(b) Name the specific type of cardboard that would be used for the outer box.

..... [1]

(c) Give **one** advantage to the manufacturer of using a recycled material for the outer box.

.....
.....
..... [1]

(d) Fig. 4 below shows a symbol printed on the outer box.

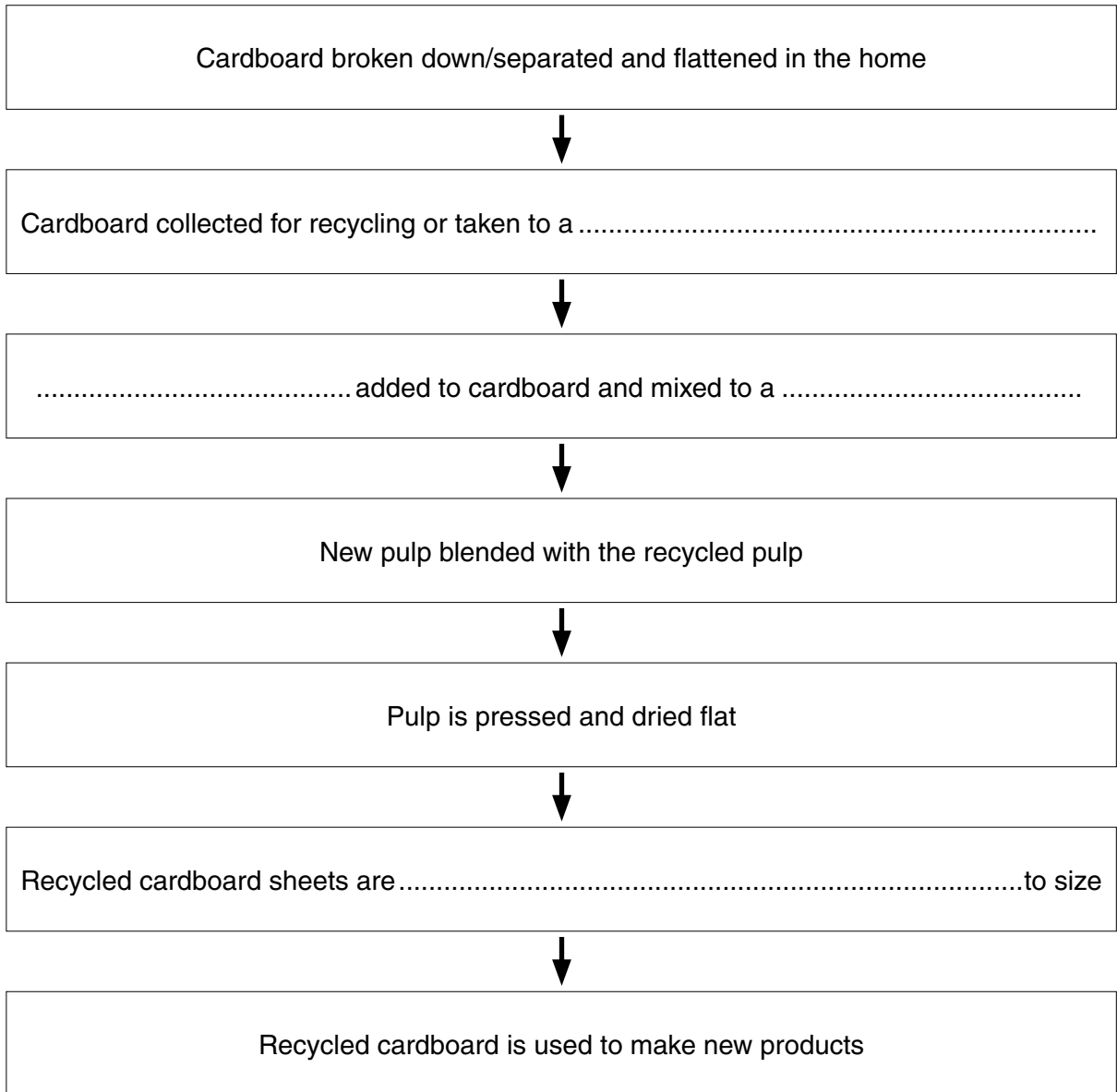
Explain what this symbol tells you about the **original** material used to make the box.



Fig. 4

.....
.....
..... [2]

(f) Complete the sentences below to show the process of **recycling cardboard**.



[4]

Total [15]

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